apparatus is defined structurally and not by intended use. The apparatus in Bose is said to include an inlet 24 between a pair of short sides in housing 22 and a pipe 10 which is said to be curved immediately prior to entering the separation device. The device is said to work by centrifugal action, citing column 8, lines 23-2 [sic]. The heavy particles are said to be fed to an outer layer and exit through outlets 72 and E, while the lighter particles and gases are fed into an inner layer and removed from outlet 61. Bose is said to disclose that the device has an impeller 33 along shaft 42 to assist in separating the light and heavy particles and gases.

The Examiner contends that a worm is a type of impeller in a screw form and states that the applicant does not define the structure of the worm, so the Examiner has construed the worm as a helical threaded screw device on a shaft, and that the impeller is not necessarily a worm or helical.

Lake is said to disclose use of a screw-type impeller blade with a helical nature in centrifugal pumping, and thus concludes that it would be obvious to substitute a helical worm-type impeller for the impeller of Bose. One of ordinary skill is said to be motivated to do so because a helical-type impeller does not "rag" (clog) when impurities are introduced (citing col.1 ll.5-10, 20-25 thereof). Since the intended use of Bose introduces particulate matter into the separator device, prevention of clogging in the device would be a sought-after improvement.

Regarding claim 2, the speed or flow rate of the steam/fibers fed to the apparatus in Bose is said to be adjustable, and the impeller speed can be adjusted so that the difference in velocity between the conduit and the "worm" can be minimized.

As for claim 3, Bose is said to have a radially extending rear chamber to which outlet 54 is connected to move light gases and particles, and the outlet is said to be shown to exit from the rear of the device through an axial pipe not from the radial of the device. However, the Examiner contends that immediately after exiting the pipe makes a 90° turn and is

radial, and thus concludes that it would be obvious to have the pipe internal to the device.

Regarding claims 4 and 5, Bose is said to show that prior to the turn into the device, pipe 10 forms a 90° angle between the longitudinal extension of the device. Regarding claim 6, Bose is said to disclose that tangential inlets increase separation efficiency (citing col.12 ll.55-60), and that it would thus be obvious to make inlet 24 tangential to the separation device.

Finally, with respect to claim 7, Bose is said to show conduits entering and leaving the separation apparatus, and although it is not clear whether these are tubular, rectangular, or quadratic, they are said to most likely be tubular, and in any event, it is said to be obvious to try any one of those pipes without evidence of unexpected results. These rejections are respectfully traversed in view of the above amendments and arguments and for the reasons set forth hereinafter.

Initially, while an apparatus must be judged in terms of its structure, the prior art applied against the apparatus must be applied using all of the applicable rules of obviousness, beginning, of course, with those of *Graham v. John Deere*, 383 U.S. 1 (1966). Indeed, as recently as the case of *KSR v. Teleflex*, 550 U.S. 398 (2007), it remains important in any obviousness inquiry to identify "a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Takeda Chem. Indus. v. Alphapharm Pty. Ltd.*, 492 F.3d 1350, 1356-57 (Fed. Cir 2007), *cert. denied*, 128 S. Ct. 1739 (2008) (quoting *KSR*, 550 U.S. at 418). As the Supreme Court thus stated in the *KSR* case:

> As is clear from cases such as *Adams*, a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.

KSR, 550 U.S. at 418.

Indeed, the court went further cautioning against the use of hindsight reconstruction as follows:

> A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments relying upon *ex post* reasoning. *See Graham* 383 U.S. at 36 (warning against a "temptation to read into the prior art the teachings of the invention in issue" and instructing courts to "guard against slipping into use of hindsight" (quoting *Monroe Auto Equip. Co. v. Heckethorn Mfg. & Supply Co.*, 332 F.2d 406, 412 (CA 6 1964).

Id. at 421.

It is in this context that the combination of references relied upon by the Examiner in this case, as well as the very nature of these references should be reviewed.

Turning first to Bose, this reference is directed to methods for purifying exhaust gases from internal combustion engines. Thus, the separation of these gases occurs in Bose by the gases entering entry port 24, being diverted by shaft 42 into the stator wheel 28 where they are deflected to smoothly pass through to the impeller 33. These gases themselves thus effect rotation of the impeller 33 so that the gases then emerge from the stator 38 spinning in a direction to centrifugally stratify in the vortex tube 20. While most of the lighter gases simply pass outwardly in the direction of arrow B, separation of the heavier gases takes place in the vortex tube, and the heavier gases which are rotating in the vortex tube, emerge through port 63.

Gas separation in Bose therefore only takes place downstream of the impeller 33, and certainly does not take place in accordance with any apparatus comparable to that of the present invention. It is thus initially noted that according to the claims in the present application, the conduit for feeding the mixture of steam and fibers herein is curved at the inlet so as to separate the steam and fibers into heavy and light fractions as they are fed through the inlet. Again, separation

is required to occur at the point of entry of this mixture into the apparatus, quite unlike anything in Bose. Subsequently, in the claimed device hereof, the separated fractions of fibers are conveyed by means of the conveyor worm, and the lighter fraction is removed through an outlet.

In Bose, not only does none of this occur, but in fact all of the separation in Bose takes place after the gas mixture has entered into the cylindrical housing 22 connected to the vortex chamber 20, and certainly does not contemplate any separation of any kind prior to the impeller 33. Thus, the Examiner's reference to centrifugal force is not well taken, since Bose himself only refers to such downstream of the impeller 33 and the stator 38, whereby the gases are now spinning due to the action of the impeller, and are only subject to centrifugal force at that point.

The Examiner has initially interpreted applicant's conveyor worm for feeding fibers in accordance with this invention, but has nevertheless concluded that the impeller in Bose does not constitute a worm. In any event, the impeller in Bose is not intended to merely move a separated fraction of any kind, but is, in fact, intended to initiate a spinning motion so that the fractions can subsequently be separated in the vortex chamber 20.

In order to overcome these clear deficiencies in Bose, the Examiner attempts to rely on Lake. Lake, however, simply relates to a single vane impeller which is for a particular application for pumping liquids with high solids contents. It is inconceivable that one of ordinary skill in any related art would attempt to combine Lake with Bose, and if so, employing an impeller of this type for pumping high solids contents liquids in place of the impeller 33 in Bose would not make any sense whatsoever. The purpose of the Bose impeller is to spin upon the application of gases thereonto, and thus create a spinning

motion in the gases themselves. Use of an impeller such as that in Lake, even if it could somehow be justified, would certainly not accomplish this result. Referring again to the *KSR* decision discussed above, there is simply no teaching or motivation whatsoever, apart from pure hindsight reconstruction, by which one would conceivably make this combination and attempt to obviate the present invention.

Applicant therefore respectfully submits that the amended claims in this application clearly possess the requisite novelty, utility and unobviousness to warrant their immediate allowance, and such action is therefore respectfully solicited. If, however, for any reason the Examiner still does not believe that such action can be taken, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any further objections to the allowance of this application.

Finally, if there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: September 15, 2009

Respectfully submitted,
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